2017 National Geospatial Data Asset (NGDA) Theme Summary Report
Transportation Theme

Overview:

This report aggregates information related to the National Geospatial Data Asset (NGDA) Theme in the title above. NGDA Themes serve as the management units for collections of related NGDA Datasets that benefit from coordinated development and management across the NGDA national geospatial portfolio. These NGDA Datasets are considered national capital assets and must meet the criteria outlined in OMB Circular A-16 *Supplemental Guidance*. The guidance directs the Federal Geographic Data Committee (FGDC) through cooperation with Federal agencies to implement and use a Portfolio management approach for managing NGDA Themes and their associated NGDA Datasets both within and across NGDA Themes. This ensures NGDA Themes are managed by officially designated agencies, on behalf of all users. In addition, each NGDA Theme has a Strategic Plan that establishes goals and objectives and an associated Implementation Plan that describes the activities the Theme will undertake to address them. Unless otherwise noted, this report covers the period from the baseline Lifecycle Maturity Assessment (LMA) in 2015 to August 2017.

NGDA Theme Details:

Theme: Transportation Theme

Theme Definition: Means and aids for conveying persons and/or goods. The transportation system includes both physical and non-physical components related to all modes of travel that allow the movement of goods and people between locations.

Theme Lead Agency: U.S. Department of Transportation

Theme Executive Champion:
Name:	To be determined
Agency:	U.S. Department of Transportation
Email:	To be determined

Theme Lead:
Name:	Raquel Wright
Agency:	U.S. Department of Transportation
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Total Associated NGDA Datasets: 16

The following NGDA Datasets are associated with this NGDA Theme. This list includes an embedded hyperlink to the NGDA metadata found on Data.gov. Please note if the metadata has been updated and re-harvested after publication of this report, the link may no longer be valid. The NGDA Dataset may be searched for manually in Data.gov or GeoPlatform.gov by using the official NGDA Name (in Table 1 below) and including the keyword "NGDA" to narrow the results.

NGDA Name and Associated Data.gov Link	Agency Acronym
2010 Census Traffic Analysis Zone (TAZ)	DOC-Census
Airports (National)	DOT-FAA
Fixed-Guideway Transit Lines (National)	DOT-BTS
Fixed-Guideway Transit Stations (National)	DOT-BTS
Freight Intermodal Facility (National)	DOT-BTS
Inland Electronic Navigational Charts (IENC)	DOD-USACE
National Bridge Inventory	DOT-BTS
Navigable Waterway Nodes (National)	DOD-USACE
Navigable Waterway Routes (National)	DOD-USACE
Passenger Intermodal Facility (IPCD) (National)	DOT-BTS
Ports (National)	DOD-USACE
Rail Lines (National)	DOT-BTS
Rail Nodes (National)	DOT-BTS
Roads (All Roads)	DOC-Census
Runways (National)	DOT-FAA
Waterway Locks (National)	DOD-USACE

Table 1: Theme NGDA Datasets.

Lifecycle Maturity Assessment (LMA) Overview

Introduction

The Geospatial Data Lifecycle has seven stages that agencies should use when developing, managing and reporting on NGDA Datasets. These stages and their associated benchmarks[1] are defined in the A-16 *Supplemental Guidance* Stages of the Geospatial Data Lifecycle (see Figure 1). Reporting on the status of each NGDA Dataset is an OMB requirement, and assessing the developmental maturity of the NGDA provides managers the ability to support NGDA Datasets in a more universal and transparent manner. The FGDC NGDA lifecycle maturity assessment is based on responses made by Dataset Managers to questions associated with benchmarks in each lifecycle stage. Each stage has a range of benchmark activities, from no activity to significant activity, which provide the interpretation of maturity for each benchmark within a stage and cumulatively for each stage. The cumulative level of activity across each stage and for all stages determines the maturity of the each NGDA Dataset based on a Maturity Matrix (see Table 2) and the response metrics from How to Calculate Maturity. In this report, the LMA results for all the associated NGDA Datasets are aggregated through an average calculation at the Theme level. Additional information can be found at the GeoPlatform.gov 2017 Lifecycle Maturity Assessment (LMA) Community web page. Individual NGDA Dataset Reports can be found at FGDC.gov.
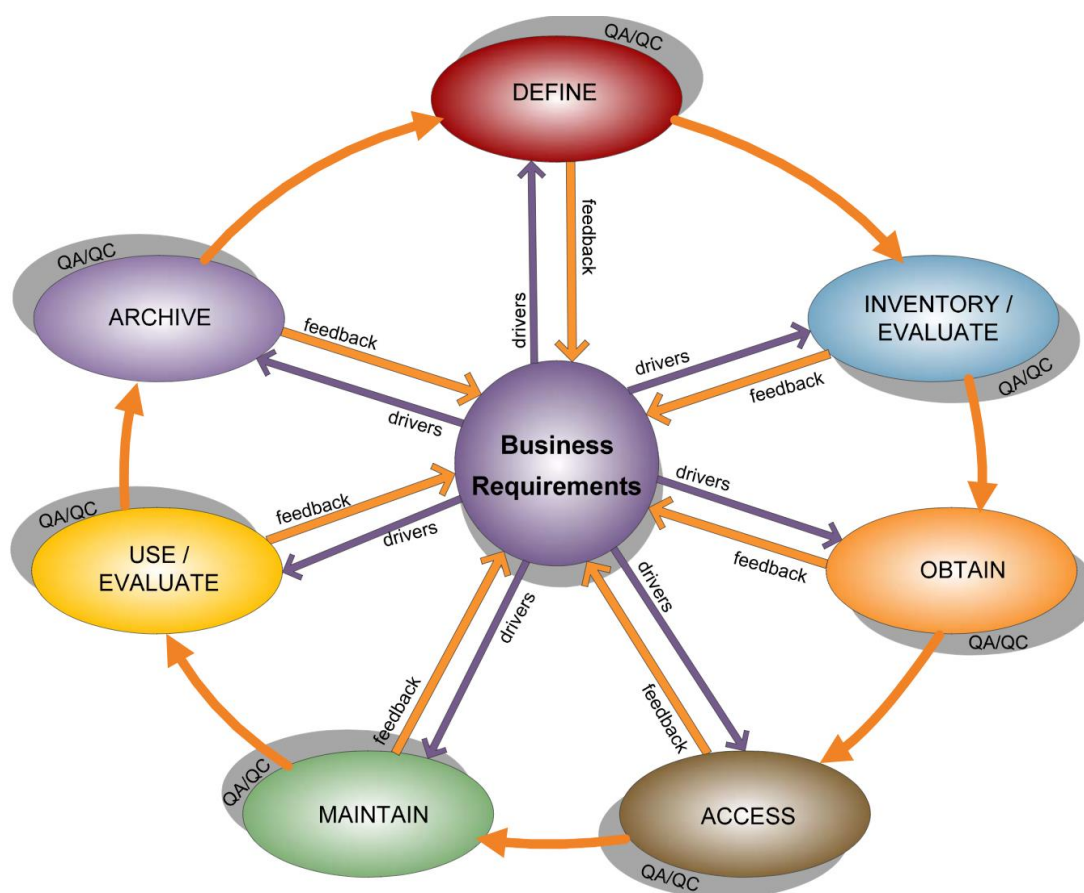

Figure 1. The Geospatial Data Lifecycle

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[1] Benchmarks are detailed in Table B1 of the Stages of the Geospatial Data Lifecycle document.

2017 Lifecycle Maturity Assessment Maturity Matrix

The Lifecycle Maturity Assessment Maturity Matrix provides descriptions of the maturity characteristics of benchmark activities for each stage within a dataset that result in a maturity level of 0-5, with no activity being level zero and optimized being level five, applied consistently across all lifecycle stages.

Maturity Level	Maturity Characteristics for All Lifecycle Stages
Optimized; Established Level = 5	Dataset meets virtually all business needs of all users. The dataset is considered authoritative by owners and secondary users. It is curated across all stages of the approved lifecycle. Future needs are defined for both the primary owner and secondary users on a regular basis and resources for addressing both current and future business requirements are available.
Mature; Consistent Level = 4	Dataset meets all the business needs of the primary owner and most of the secondary users. The dataset is curated and used as an authoritative resource by the primary owner and secondary users. Future needs are being identified and steps are planned to address these. All stages are supported and reviewed on a recurring basis. The dataset is well managed in relation to the approved lifecycle.
Managed; Predictable Level = 3	Dataset meets a significant number of the business needs of the primary owner and is widely used by secondary users. Benchmark activities are occurring in at least four of the approved lifecycle stages. Management practices in relation to the approved lifecycle is moderate but consistent. Dataset is integrating changing business requirements in lifecycle stages impacting overall maturity.
Transition; Transformation Level = 2	Dataset meets business needs of the primary owner and has moderate use by secondary users. Benchmark activities are occurring in at least three stages. Efforts to integrate funding, include partners, and obtain data are not supported in a sustained manner. Management practices in relation to the stages of the approved lifecycle is limited.
Planned; Initial Development Level = 1	Dataset in initial planning or limited in meeting business needs of the primary owner. Benchmark activities in the approved lifecycle are just starting to consider secondary uses, Partners/stakeholders involvement is being defined and developed to support additional dataset uses. Dataset development is in a very early stage. Minimal or limited management against the benchmarks in the approved lifecycle.
No Activity Level = 0	Dataset not developed or meets project/local business needs of the primary owner. Secondary, additional uses, or partners/stakeholders were not considered. Dataset is not recognized as authoritative data or is part of a similar dataset. Not managed to any of the benchmarks in the approved lifecycle.

Table 2: 2017 Maturity Matrix.

2017 LMA Maturity Results for the Theme

Based on the LMA results, maturity averages are calculated for all NGDA Datasets associated with the Theme to illustrate a roll-up of the general questions for all stages, and each lifecycle stage as shown in Table 3 below. This table provides a high-level view of the aggregated maturity of the NGDA Datasets in the Theme.

| Maturity Categories	Maturity Level
Roll-up NGDA Maturity	**4 - Mature; Consistent**
General Questions for All Stages	3 - Managed; Predictable
Stage 1: Plan/Define	4 - Mature; Consistent
Stage 2: Inventory/Evaluate	4 - Mature; Consistent
Stage 3: Obtain	4 - Mature; Consistent
Stage 4: Access	5 - Optimized; Established
Stage 5: Maintain	4 - Mature; Consistent
Stage 6: Use/Evaluate	4 - Mature; Consistent
Stage 7: Archive	5 - Optimized; Established

Table 3: 2017 Maturity Results.

LMA Process Changes between 2015 and 2017

In 2015, a baseline assessment of NGDA was performed for each of the datasets in the federal geospatial portfolio. Information related to the 2015 baseline LMA can be found at 2015 NGDA Lifecycle Maturity Assessment, which also includes a link to the 2015 Reports. A follow-up analysis of the 2015 LMA baseline process and its results identified ways to improve the LMA workflow, increase efficiency as well as decrease the reporting burden. Several recommendations were identified and implemented in 2017, which included improvements to normalize the responses in 2017. A secondary effect of improvements to normalization is that results from 2017 and 2015 are not directly comparable. These changes, and their impacts, are detailed in the webpage: Temporal Changes in Lifecycle Maturity Assessment (LMA) Maturity and Results Comparisons.

Aggregated Maturity Level for Theme NGDA Datasets

The pie graph below shows the number of NGDA Datasets within each maturity level for this Theme.
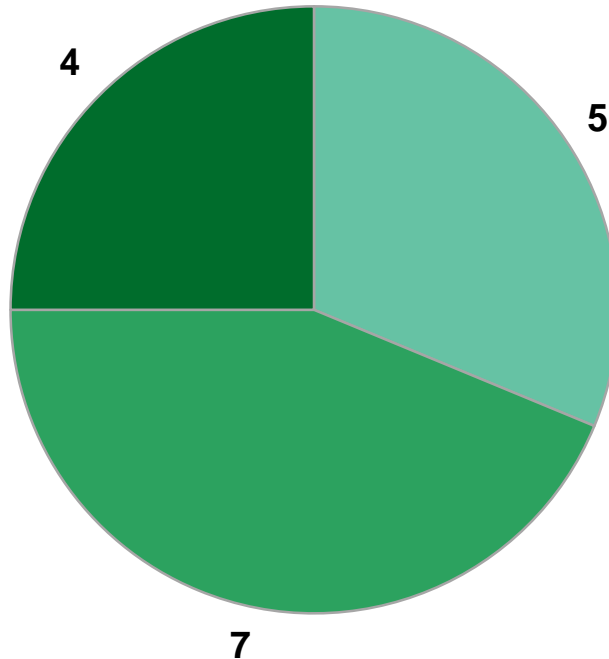
Graph 1: Aggregated NGDA Dataset Maturity Level Counts in the Theme.

Key for NGDA Dataset Maturity Level:

Optimized; Established Level = 5 5/5	Mature; Consistent Level = 4 4/5	Managed; Predictable Level = 3 3/5	Transition; Transformation Level = 2 2/5	Planned; Initial Development Level = 1 1/5	No Activity Level = 0 0/5

Stage-based Maturity Levels for Theme NGDA Datasets

The following graphs provide information about the NGDA Dataset maturity level counts for each lifecycle stage within the Theme. This information visualizes the NGDA Datasets according to the maturity matrix, which can show potential opportunities or challenges within a Theme.
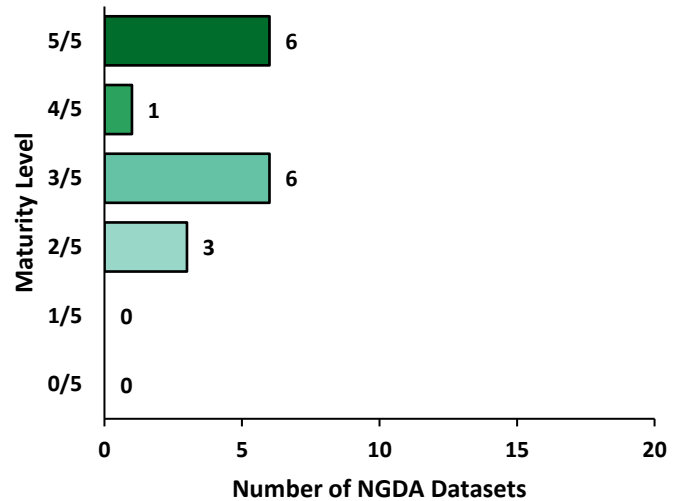
General Questions

Data characteristics that are applicable to all stages.
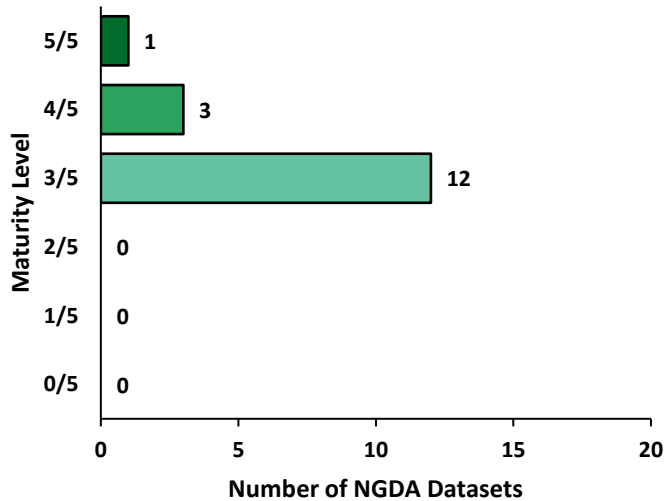
Graph 2: General Questions Stage NGDA Maturity Level Counts.
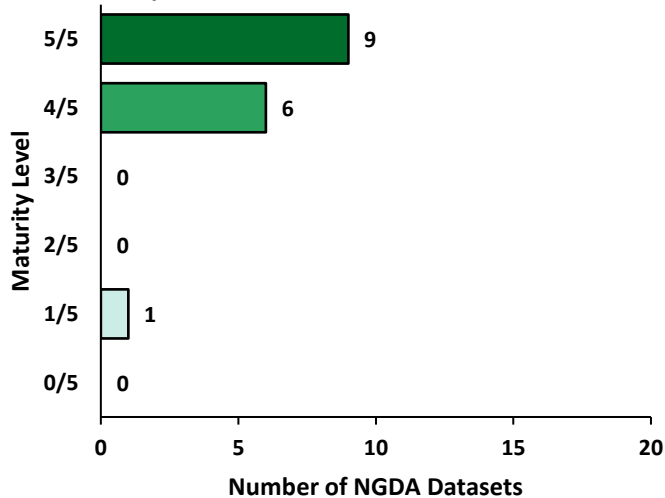
Stage 1 - Define/Plan

Characterization of data requirements based upon business-driven user needs.

Graph 3: Define/Plan Stage NGDA Maturity Level Counts.

## Stage 2 - Inventory/Evaluate

The creation and publication of a detailed list of data assets and data gaps (both internal and external) as they relate to business-driven user needs.

Graph 4: Inventory/Evaluate Stage NGDA Maturity Level Counts.

Stage 3 - Obtain

The collection, purchase, conversion, transformation, sharing, exchanging, or creation of geospatial data that were selected to meet the business needs is identified.
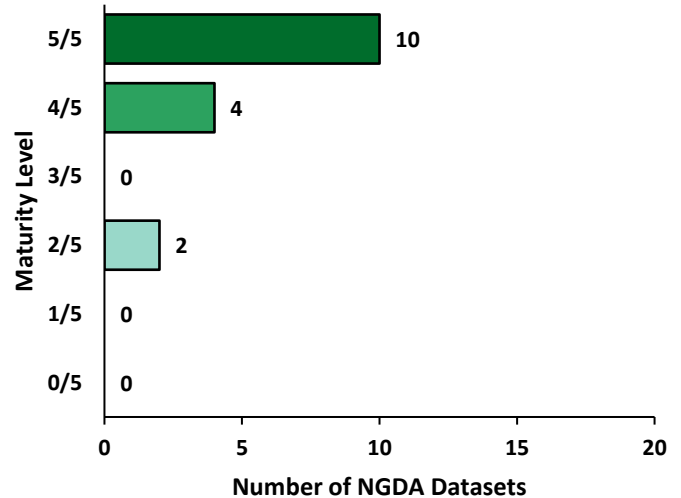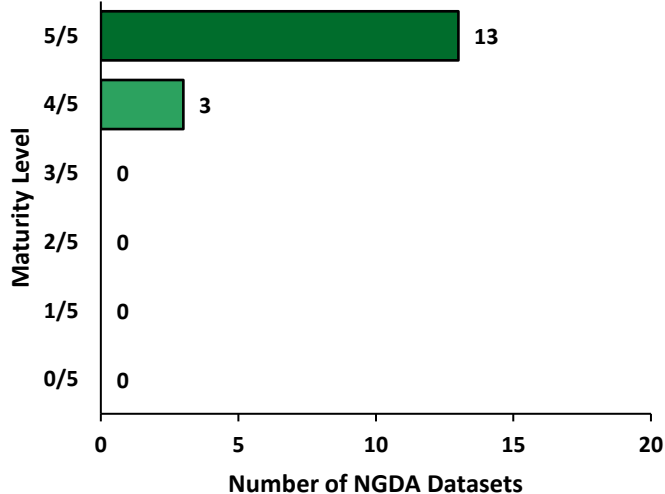

Graph 5: Obtain Stage NGDA Maturity Level Counts.

Key for NGDA Dataset Maturity Level:

| Optimized; Established Level = 5 5/5	Mature; Consistent Level = 4 4/5	Managed; Predictable Level = 3 3/5	Transition; Transformation Level = 2 2/5	Planned; Initial Development Level = 1 1/5	No Activity Level = 0 0/5

Stage 4 - Access

Making data known and retrievable through documentation and discovery mechanisms to meet user needs and business requirements.

Graph 6: Access Stage NGDA Maturity Level Counts.

Stage 5 - Maintain
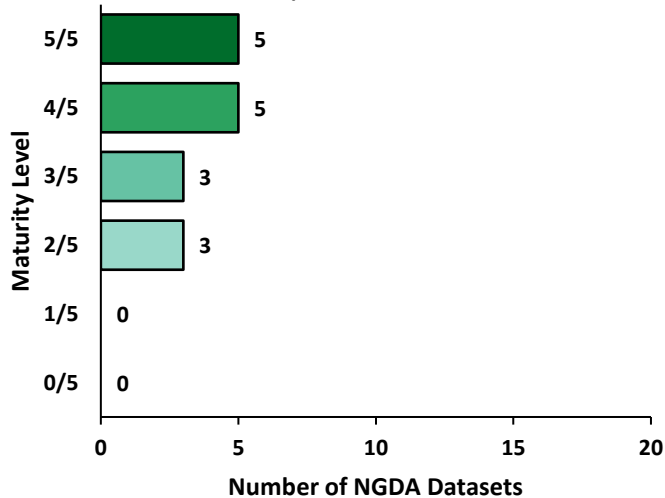
The ongoing processes and procedures to ensure that the data meet business requirements.
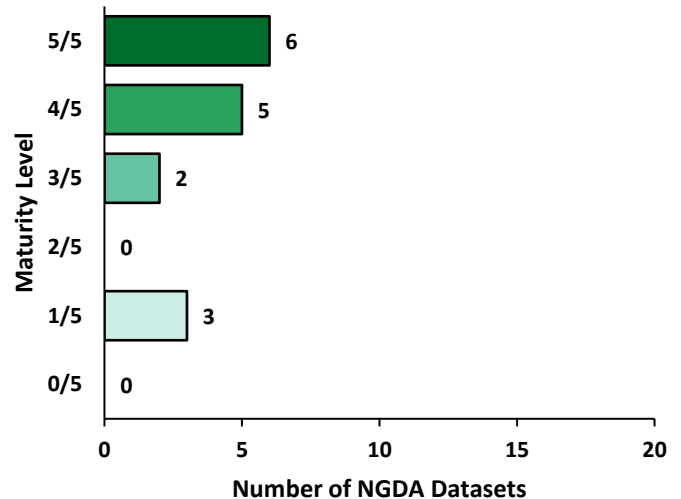
Graph 7: Maintain Stage NGDA Maturity Level Counts.

Stage 6 - Use/Evaluate

The ongoing assessment, validation, and potential enhancement of data to meet user needs and business requirements.

Graph 8: Use/Evaluate Stage NGDA Maturity Level Counts.

Stage 7 - Archive

Facilitate the appraisal, retention, storage, and accessibility of data and establish mechanisms for development of stewardship tools and services.
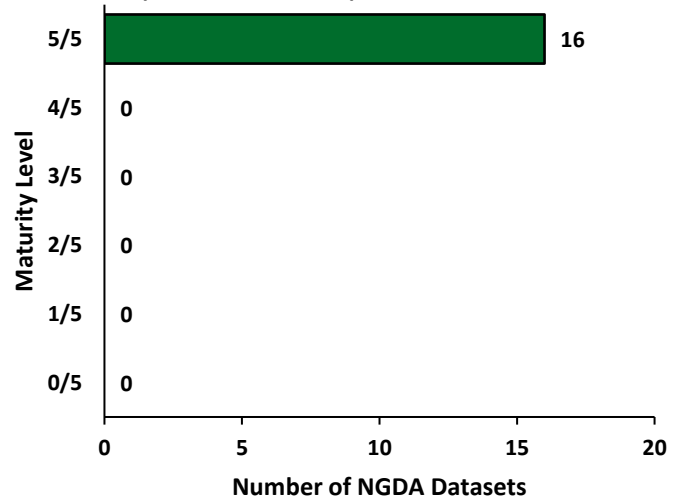
Graph 9: Archive Stage NGDA Maturity Level Counts.

Key for NGDA Dataset Maturity Level:

Optimized; Established Level = 5 5/5	Mature; Consistent Level = 4 4/5	Managed; Predictable Level = 3 3/5	Transition; Transformation Level = 2 2/5	Planned; Initial Development Level = 1 1/5	No Activity Level = 0 0/5

Theme NGDA Dataset Maturity Levels for Selected LMA Questions

In this section, several LMA questions have been identified that provide additional insight into Theme NGDA Dataset maturity levels including funding, obtaining data (acquisition), and quality control/quality assurance. By separating these questions from a particular stage, more information can be discerned about the NGDA Datasets within a Theme and help identify activities that are doing well or where some additional attention may be needed. For each of these maturity questions, if the "0/5" (No process exists) option was selected, additional detail was requested. Optional information could also be provided for the supplemental justification questions under the "Other" response option.

Funding

Question 1 in the LMA asks about a process to obtain funding for all lifecycle stages such as planning, development, maintenance, access, and archiving of an NGDA Dataset. The question also provides additional detail about primary and secondary funding sources.

Question 1		General Questions
Is there a recurring process to obtain funding for all lifecycle stages of this dataset?		
Maturity Level	**Number of Responses**	**Response Options**
5/5	3	Funding support is part of agency budget on a recurring basis, funding is consistent and tied to business requirements, and supports all lifecycle stages
4/5	2	Funding is currently adequate and consistent but tied to business requirements whose appropriations are not directed to support all lifecycle stages of the NGDA
3/5	5	Funding support exists but is not adequate to meet known requirements, most lifecycle stages are supported
2/5	1	Funding is planned at agency level, supporting staff is assigned, but funding is not recurring, some lifecycle stages are supported
1/5	4	Funding is from local offices, budgeting effort is minimal, staffing is minimal
0/5	1	No process to obtain funding exists (Please explain) • There are no funding plans identified at this time. In the past, funding came from the project sponsors, the Federal Highways Administration (FHWA) and the American Association of State Highway Transportation Officials (AASHTO) supplemented by funding appropriated to the Census Bureau's Social, Economic, and Housing Statistics Division (SEHSD).

Table 4: NGDA Maturity Level Totals for Funding.

Question 1.a	General Questions
1.a) To justify your response to Question 1, what is the primary funding source for your NGDA?	

Number of Responses	Response Options
1	**Directed appropriation(s) –** Funding signed into law by Congress for a specific program that supports this NGDA or the NGDA itself.
7	**Federal agency –** General lead agency budgetary funding for a specific program that supports this NGDA or the NGDA itself.
1	**Federal interagency –** Agreements between two or more different Federal Department(s), Agency(ies), Bureau(s), and/or Office(s) to provide funding for a specific program that supports this NGDA or the NGDA itself.
6	**Other –** (Please explain) • Data set was developed to support the Waterborne Commerce Statistics Center (WCSC) mission which is authorized by Rivers & Harbors Act of 1922. http://www.navigationdatacenter.us/wcsc/wcscmiss.htm • Data set was developed to support the Waterborne Commerce Statistics Center (WCSC) mission which is authorized by Rivers & Harbors Act of 1922. http://www.navigationdatacenter.us/wcsc/wcscmiss.htm Continued maintenance is essential to accomplishing the WCSC mission and ongoing maintenance and updates will be performed as part of that mission. (3 responses) • The Federal Aviation Administration's Office of Airports collects data utilizing recurring processes defined in FAA Order 5010.4: Airport Safety Data Program and Advisory Circular 150/5300-18: General Guidance and Specifications for Aeronautical Surveys: Airport Survey Data Collection and Geographic Information System Standards . This program is defined through funding requests updated and submitted annually, governed by 49 U.S. Code § 47130 - Airport safety data collection. These programs are managed by the Federal Government, with additional contract support utilized as needed. The information obtained can be accessed through the FAA's National Flight Data Center who stores, maintains, disseminates and archives the data for public consumption. http://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.current/documentNumber/150_5300-18 https://www.faa.gov/regulations_policies/orders_notices/index.cfm/go/document.information/documentID/8422 (2 responses)

Table 5: Primary Funding Source for NGDA Datasets in Theme.

Obtaining Data

Question 10 in the LMA identifies whether a process exists for obtaining data related to the NGDA and if so, what actions are performed to obtain data. There may be multiple ways data is obtained for an NGDA Dataset.

Question 10		Stage 3 - Obtain
Is there a process for obtaining data for this dataset?		
Maturity Level	**Number of Responses**	**Response Options**
5/5	7	Fully implemented including recurring assessments
4/5	4	Implementation well established
3/5	1	Implementation progressing
2/5	2	Developed, documented, and implementation started
1/5	2	Under development
0/5	0	No process exists

Table 6: NGDA Maturity Level Totals for Obtaining Data.

Question 10.a	Stage 3 - Obtain
10.a) To justify your response to Question 10, what actions are performed to obtain data?	
Number of Responses	**Response Options**
6	Obtain data by modifying, converting, or transforming data
6	Obtain data by sharing/exchanging
9	Obtain data by creating and/or collecting the data
7	Other – (Please explain) • Industry publications are reviewed for info on new, upgraded, or closed facilities. When new facilities appear as origins or destinations of commodity movements on Vessel Operation Reports, a process is in for adding those facilities to the dataset • State DOTs, Federal agencies, and Tribes submit updated NBI data annually to FHWA. • The process for airports reporting this data is codified in Order 5010.4A Airport Data and Information Management and guidance to Airports are provided in Advisory Circular (AC) 510/5300-19 Airport Data and Information Program. Both the order and AC have just been recently updated in a long term formal process. The financial support for the Office of Airport supplemental data collection is funded under a grant in our Airport Improvement Program enabling legislation; 49 U.S. Code § 47130 - Airport safety data collection (2 responses) • The Waterborne Commerce Statistics Center maintained 235 Corps of Engineers lock- links and nodes within waterway network that represent lock locations throughout the U.S. • WCSC is responsible for maintaining waterway network dataset. (2 responses)

Table 7: Actions Performed to Obtain Data for NGDA Datasets in Theme.

Quality Assurance/Quality Control (QA/QC)

Question 15 in the LMA asks whether a process for quality assurance/quality control exists and the level of maturity of the process.

Question 15		Stage 5 - Maintain	
Is there a quality assurance/quality control (QA/QC) process as part of this dataset's maintenance?			
Maturity Level	**Number of Responses**	**Response Options**	
5/5	6	Fully implemented including recurring assessments	
4/5	5	Implementation well established	
3/5	2	Implementation progressing	
2/5	0	Developed, documented, and implementation started	
1/5	3	Under development	
0/5	0	No process exists	

Table 8: NGDA Maturity Level Totals for Quality Assurance/Quality Control Process.

Transportation Theme Strategic Goals and Objectives Progress Report

Introduction and Background

Each NGDA Theme has a Theme Strategic Plan to guide Theme development and management. It is developed by the Federal agencies with Theme leadership roles. Each Theme Strategic Plan describes the goals and objectives for the Theme and generally spans 3 to 5 years. It is assessed annually as needed for significant changes. In 2016-2017, the FGDC Steering Committee identified the additional priority for each Theme to develop a Theme Implementation Plan that identifies the actions and activities necessary to achieve the Theme's goals and objectives. The NGDA Themes' Strategic and associated Implementation Plans are available in Adobe PDF format via the respective Geoplatform.gov NGDA Theme Community pages (see Resource Links below).

Resource Links

Theme Strategic Plan: [Transportation Theme Strategic Plan](#)

Theme Implementation Plan: [Transportation Theme Implementation Plan](#)

Progress in 2017

As noted above, Theme Strategic Plans identify goals and objectives for the Theme as they relate to Agency Strategic Plans. The Theme Implementation Plans further identify actions and activities that will be taken to support those goals and objectives. The Implementation Plans also include milestones, projected completion dates and performance indicators, and identify stakeholders and responsible parties. A summary of progress against the Theme Strategic Plan goals and objectives is provided as part of this overall Theme Summary Report. The following table shows the progress status made toward achieving the objectives during 2017. Status includes three categories: 'Not Started' for those activities that have not gotten underway; 'In Progress' for those activities underway which will continue into the next year; 'Complete' for the activities finished in this time frame. Additionally, if activities supporting the goal and objective are completed in the current year and will reoccur again on an annual basis, they are designated 'Recurring (completed for 2017)'.

Summary of Goals and Objectives undertaken during 2017	Status
Goal 1: Facilitate the Sharing of Transportation Geospatial Data	
Objective 1.1: Provide Web Feature Services for the National Geospatial Data Asset (NGDA) datasets of the Transportation Theme.	In Progress
Objective 1.2: Leverage the Geospatial Platform.	In Progress
Goal 2: Ensure the Effective Development of the Transportation NGDA Datasets	
Objective 2.1: Continued development and support of the All Roads Dataset NGDA and its related Address Range-Feature Name Relationship File and the Address Ranges Relationship File NGDAs.	In Progress
Objective 2.2: Continued development and support of the Rail NGDA.	In Progress
Objective 2.3: Continued development and support of the Airports and Runways NGDAs.	Recurring (completed for 2017)
Objective 2.4: Continued development and support of the Transit NGDA.	Recurring (completed for 2017)
Objective 2.5: Continued development and support of the Bridge NGDA.	In Progress
Objective 2.6: Continued development and support of the Intermodal Facilities NGDA.	In Progress
Objective 2.7: Continued development and support of the Navigable Waterway, Ports, Locks, and Inland Electronic Navigation Charts NGDAs.	Recurring (completed for 2017)
Objective 2.8: Continued development and support of the Traffic Analysis Zones NGDA.	Recurring (completed for 2017)
Goal 3: Convene Leadership of the Transportation Geospatial Community	
Objective 3.1: Lead and participate in the development and coordination of national and international standards applicable to the transportation geospatial community.	In Progress
Objective 3.2: Lead the transportation geospatial community and advocate shared resources.	Recurring (completed for 2017)

Table 9: 2017 Progress Summary for Theme Strategic Plan Goals and Objectives.